REMARKS

In the non-final Office Action, the Examiner rejects claims 10-12 and 17-20 under 35 U.S.C. § 103(a) as unpatentable over ANDERSSON et al. (U.S. Patent No. 7,023,846) in view of HARIGUCHI et al. (U.S. Patent No. 6,956,858). Applicants respectfully traverse this rejection.[1]

By way of the present amendment, Applicants amend claims 11, 12, and 18-20 to improve form and add new claims 21-33. No new matter has been added by way of the present amendment. Applicants note that new claims 21-33 correspond to original claims 1-9 and 13-16. Claims 10-12 and 17-33 are pending.

Rejection under 35 U.S.C. § 103(a) based on ANDERSSON et al. and HARIGUCHI et al.

Claims 10-12 and 17-20 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over ANDERSSON et al. and HARIGUCH et al. Applicants respectfully traverse this rejection.

Independent claim 10 is directed to a method of configuring a networking device. The method includes generating a first forwarding table; generating a second forwarding table; programming a filter to perform a lookup operation in the first forwarding table if a first field value of a received packet meets one or more conditions of a first set of conditions; and programming the filter to initiate a lookup operation in the second forwarding table if the first field value does not meet one or more conditions of the first

[1] As Applicants' remarks with respect to the Examiner's rejections overcome the rejections, Applicants' silence as to certain assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, reasons for modifying a reference and/or combining references, assertions as to dependent claims, etc.) is not a concession by Applicants that such assertions are accurate or that such requirements have been met, and Applicants reserve the right to dispute these assertions/requirements in the future.

set of conditions. ANDERSSON et al. and HARIGUCHI et al., whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, ANDERSSON et al. and HARIGUCHI et al. do not disclose or suggest programming a filter to perform a lookup operation in a first forwarding table if a first field value of a received packet meets one or more conditions of a first set of conditions and programming the filter to initiate a lookup operation in a second forwarding table if the first field value does not meet one or more conditions of the first set of conditions, as recited in claim 10. The Examiner admits that ANDERSSON et al. does not disclose these features (Office Action, pg. 3). To remedy this deficiency, the Examiner relies on Figs. 3 and 36, column 2, lines 16-57, and column 5, lines 43-54 of HARIGUCHI et al. for allegedly disclosing the above features of claim 10 (Office Action, pp. 3-4). Applicants note that there are there is no Fig. 36 in the HARIGUCHI et al. document. Applicants further disagree with the Examiner's interpretation of HARIGUCHI et al.

In Fig. 3, HARIGUCHI et al. illustrates a router that uses a routing table to search for a route corresponding to a destination address in a fixed, deterministic, amount of time (column 7, lines 39-41). HARIGUCHI et al. does not disclose that the routing table is used to search for a route when a first value of a received packet meets one or more conditions of a first set of conditions. In fact, Fig. 3 of HARIGUCHI et al. does not disclose or suggest a set of conditions at all. Therefore, Fig. 3 of HARIGUCHI et al. does not disclose or suggest programming a filter to perform a lookup operation in a first forwarding table if a first field value of a received packet meets one or more conditions of a first set of conditions and programming the filter to initiate a lookup operation in a

second forwarding table if the first field value does not meet one or more conditions of the first set of conditions, as recited in claim 10.

At column 2, lines 16-57, HARIGUCHI et al. discloses:

> To determine a route, one prior art routing table architecture uses a hash table. In hash-based routing tables, two tables and one special route entry are typically used. The first table, rt_host, is used for host routes and stores IP host addresses and output ports. The second table, rt_net, is used for network routes and stores IP network addresses and their route information. The special route entry specifies a default route. When a packet is being routed, the router searches the first table, rt_host, for host routes, if any. The router performs the search by comparing the destination address to the IP host addresses in the routing table. When no IP host address in the first table matches the destination address, the first table does not specify the host route and the search fails. When the search of the first table fails to find a host route, the router searches the second table, rt_net, to determine a network route, if any, using the destination address and the IP network addresses stored in the second table. When no IP network address in the second table matches the destination address, the second table does not specify the network route and the search fails. When the search of the second table fails to find a network route, the router uses the default route, if specified.
>
> The first and second tables, rt_host and rt_net, respectively, are usually implemented as hash tables. For the first table, rt_host, routers use the entire destination IP host address in the incoming packet as a hash key to determine a starting pointer to a linked list in the first table. A linear search is performed through the linked list to determine whether the destination IP host address matches any entry in the linked list. If so, this matching entry, which has the host route, is returned.
>
> For the second table, rt_net, routers use a set of leading bits of the destination IP host address in the incoming packet as a hash key to determine a starting pointer to a linked list in the second table. The set of leading bits of the destination IP host address is the destination IP network address. Routers determine the prefix length from the traditional IP address class information. The router uses the prefix length to determine the number of leading bits of the destination IP network address to apply as the hash table key. A linear search is then performed through the linked list to determine whether the destination IP network address matches any entry in the linked list. If so, this matching entry, which contains the network route, is returned.

This section of HARIGUCHI et al. discloses that, when a packet is routed, the router searches the first table for host routes, if any. When no IP host address in the first table matches the destination address of the packet, the router searches a second table to determine a network route, if any, using the destination address and the IP network

addresses stored in the second table. HARIGUCHI et al. discloses automatically searching in the first table. In other words, HARIGUCHI et al. discloses performing a lookup operation in a first table regardless of whether a field of a packet meets one or more conditions of a first set of conditions. Therefore, this section of HARIGUCHI et al. does not disclose or suggest programming a filter to perform a lookup operation in a first forwarding table if a first field value of a received packet meets one or more conditions of a first set of conditions and programming the filter to initiate a lookup operation in a second forwarding table if the first field value does not meet one or more conditions of the first set of conditions, as recited in claim 10.

At column 5, lines 43-54, HARIGUCHI et al. discloses:

> One embodiment of the invention provides a routing table circuit that comprises a route engine and one or more routing table memories storing a plurality of routing table arrays. The routing table arrays are arranged hierarchically in a plurality of levels, and each routing table array is associated with a predetermined subset of prefixes of the IP address. Each routing table has a plurality of entries. The entries include a block default route pointer field to store a block default route pointer, if any, and a routing field. The routing field may store a route pointer or a next level pointer to one of the routing tables in another level. A route engine selects the block default route pointer or the route pointer as a return route pointer based on the destination address.

This section of HARIGUCHI et al. discloses a plurality of routing table arrays arranged hierarchically in a plurality of levels, where each routing table array is associated with a predetermined subset of prefixes of the IP address. A level zero array is associated with the first sixteen bits of the destination address; a level one array is associated with the next eight bits of the destination address; and a level two array is associated with the last eight bits of the destination address (column 9, lines 11-29). When searching for a route in the array, an index into the level 0 array is generated based on the first sixteen bits of the destination address. The routing field stores a pointer to the level 1 array. Based on

the pointer to the level 1 array and a subset of bits associated with the destination address, the level 1 array is accessed (column 14, lines 18-32). Therefore, HARIGUCHI et al. discloses that the level zero array is first accessed and then subsequent arrays may be accessed based on the routing fields of the level zero array. As such, assuming the level zero array of HARIGUCHI et al. can be construed as corresponding to the first forwarding table of claim 10 (a point that Applicants do not concede), HARIGUCHI et al. does not disclose or suggest programming a filter to perform a lookup operation in the level zero array if a first field value of a received packet meets one or more conditions of a first set of conditions, as would be required by HARIGUCHI et al. based on the Examiner's interpretation of claim 10. Rather, as noted above, HARIGUCHI et al. discloses that a lookup operation is first performed in the level zero array. Therefore, HARIGUCHI et al. does not disclose or suggest programming a filter to perform a lookup operation in a first forwarding table if a first field value of a received packet meets one or more conditions of a first set of conditions and programming the filter to initiate a lookup operation in a second forwarding table if the first field value does not meet one or more conditions of the first set of conditions, as recited in claim 10.

For at least the foregoing reasons, Applicants submit that claim 10 is patentable over ANDERSSON et al. and HARIGUCHI et al., whether taken alone or in any reasonable combination.

Claims 11 and 12 depend from claim 10. Therefore, these claims are patentable over ANDERSSON et al. and HARIGUCHI et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 10.

Independent claim 17 recites features similar to (yet possibly of different scope than) features described above with respect to claim 10. Therefore, Applicants submit that claim 17 is patentable over ANDERSSON et al. and HARIGUCHI et al., whether taken alone or in any reasonable combination, for at least reasons similar to reasons given above with respect to claim 10.

Claims 18-20 depend from claim 17. Therefore, these claims are patentable over ANDERSSON et al. and HARIGUCHI et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 17.

New Claims

New claims 21-33 recite features not disclosed or suggested by the art of record.

For example, new claim 21 recites a method of packet forwarding in a router containing a plurality of forwarding tables. The method includes receiving a packet at an ingress interface; classifying the received packet based on at least a first field value contained in the header of the packet; associating one of the plurality of forwarding tables to the packet according to its classification; performing a lookup operation in the associated forwarding table according to at least a second field value contained in the header of the packet; determining an egress interface based on the lookup operation; and transmitting the received packet from the determined egress interface. The art of record does not disclose or suggest these features.

Claims 22-25 depend from claim 21. Therefore, these claims are patentable over the art of record for at least the reason given above with respect to claim 21.

New claim 26 recites a method of forwarding packets in a networking device. The method includes classifying a received packet based on information contained in the

packet; selecting one of a plurality of forwarding tables based on the classification of the received packet; performing a lookup operation using the selected forwarding table; and determining an egress interface for the packet based on the performed lookup operation. The art of record does not disclose or suggest this combination of features.

New claim 27 recites a method of configuring a networking device that includes generating a first forwarding table including information identifying a first plurality of egress interface ports; generating a second forwarding table including information identifying a second plurality of egress interface ports; programming a filter to initiate a lookup operation in the first forwarding table if a first field value of a received packet meets one or more conditions of a first set of conditions; programming the filter to initiate a lookup operation in the second forwarding table if a first field value meets one or more conditions of a second set of conditions. The art of record does not disclose or suggest this combination of features.

Claims 28-29 depend from claim 27. Therefore, these claims are patentable over the art of record for at least the reason given above with respect to claim 27.

New claim 30 recites A networking device that includes a memory for storing a first forwarding table and a second forwarding table, the first forwarding table and the second forwarding table including information identifying a plurality of egress interfaces; and a filter programmed to initiate a lookup operation in the first forwarding table if a first field value of a header contained in a received packet meets one or more conditions of a first set of conditions and to initiate a lookup operation in the second forwarding table if the first field value meets one or more conditions of a second set of conditions. The art of record does not disclose or suggest this combination of features.

Claims 31-33 depend from claim 30. Therefore, these claims are patentable over the art of record for at least the reason given above with respect to claim 30.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's reconsideration of this application, and the timely allowance of the pending claims.

While the present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues arise which could be eliminated through discussions with Applicants' representative, then the Examiner is invited to contact the undersigned by telephone to expedite prosecution of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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